



ISSN Print: 2394-7489
ISSN Online: 2394-7497
IJADS 2020; 6(3): 495-499
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www.oraljournal.com
Received: 06-04-2020
Accepted: 12-05-2020

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Knowledge, attitude and self-awareness towards Periodontics among non-clinical dental undergraduate students

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DOI: <https://doi.org/10.22271/oral.2020.v6.i3h.999>

Abstract

Background: Bacterial plaque and calculus are the most common etiological factors associated with gingival and periodontal diseases. Oral health knowledge and attitude by dental students during their academic years and after completion are crucial due to its direct influence on their aptitude to create awareness and perform appropriate treatment modalities at the community level to achieve good oral health.

Aim: To determine the oral health behavioral attitude and self-awareness levels by assessing the knowledge of periodontics, a dental wing concerned with gingival and periodontal tissues supporting the teeth among non-clinical dental undergraduate students.

Methodology: A total of 111 participants, consisting of 53 undergraduate 1st year BDS and 58 undergraduate 2nd year BDS students who were not exposed to clinical practice participated in this cross-sectional study. Self-administered structured questionnaires with 25 questions were designed based on oral health knowledge, behavior and self-awareness towards periodontics. The data was analyzed by chi-square and Kruskal-Wallis test using SPSS Statistics v. 21.0.

Results: On evaluating the knowledge about periodontics it was witnessed 86% of students were aware of this dental wing practice among which only 61% had knowledge about the periodontal structures in the oral cavity. Though 50% showed positive attitude towards oral hygiene practices, only 66% were aware about the role of plaque and calculus in periodontal disease process with a statistical significance of $p < 0.0001$.

Conclusion: The present study clearly shows a lack of self-awareness, knowledge and attitude among the budding dental students during their early academic life. It is indeed believed to impact their approach towards the patients once they enter into clinical practices. Hence steps have to be taken to incorporate positive knowledge by creating problem based education systems in the curriculum.

Keywords: Attitude, non-clinical, oral health care professional, periodontal tissues, undergraduate dental students

1. Introduction

Oral health status is often considered as the key diagnostic indicator to determine the overall health status of an individual that depends on biological, environmental, psychological, and social well-being of an individual [1]. Adolescent periodically experiences oral/dental problems predominantly gingivitis, an inflammatory condition of the gingival tissues followed by involvement of periodontal structures surrounding the tooth resulting in periodontitis. Bacterial plaque and calculus are the most common etiological factors associated with these gingival and periodontal diseases along with various confounding factors like age, gender, oral habits, malocclusion, smoking, systemic diseases, malnutrition, hormonal changes, stress and poor oral hygiene practices [2, 3]. It is also evident that chronic infection of the gingival and periodontal tissues can cause severe destruction of the underlying structures with subsequent loss of tooth if left untreated. Thus understanding the exact complex mechanism of the disease pattern, bidirectional relation between oral health and periodontal tissues and oral health related behavioral practices are essential to decrease the incidence and prevalence of oral health related problems in redefining the general health status of an individual and also for maintaining a good quality of life [4].

Effective and efficient removal of dental plaque and calculus still remains as the primary goal to achieve good and ideal oral health status. Various mechanical plaque removal methods like tooth brush, dental floss were used either separately or in conjunction with chemical methods such as dentifrices, and mouthwashes to aid in prevention and control of periodontal diseases [5]. However recent literature studies have shown a significant lack of awareness about the importance of oral and gingival health and oral hygiene practices among the general population. To achieve beneficial and effective oral health care dental professionals play a crucial role in creating awareness among the population by performing various demonstration tasks along with counseling at the individual and community level about control of oral diseases, promotion of oral health and improvement of quality of life and also evaluation of the same with appropriate preventive and treatment modalities for betterment of overall health status [6].

Knowledge and attitude towards oral health by health care providers' especially among the dental professionals is considered to be an essential prerequisite in creating awareness and health care promotion. An extensive variety of attitudes are demonstrated towards oral health care practices by general population, dental students during their educational period, and dental professionals. Oral health knowledge, attitude, and practice by dental students during their educational years and after completion of their graduation are vital because of its direct influence on their capacity to translate information at the community level to achieve good oral health [7]. These attitudes naturally reflect their own experiences, teaching and learning methods, social Medias, cultural perceptions, familial beliefs and other life situations encountered during their academic years. At the undergraduate levels, Bachelor of Dental Surgery (BDS) students are not exposed to clinical scenarios/ Practices during early part of their academics (1st and 2nd year) and understanding the importance of personal oral care practices are often neglected and ignored due to the effect of student's level of studies and lack of proper-channeled assessment study through the courses as per curriculum [8]. Little is known about the knowledge, attitude and self-awareness towards oral health care practices among the undergraduate dental students who are yet to be exposed into the clinical practices. The present survey was therefore instigated with a principal focus to assess the knowledge of periodontics, a dental wing concerned with gingival and periodontal tissues supporting the teeth among non-clinical dental undergraduate students to determine their oral health behavioral attitude and self-awareness levels.

2. Materials and methods

A total of 111 participants, consisting of 53 undergraduate 1st year BDS and 58 undergraduate 2nd year BDS students who were not exposed to clinical practice were invited to participate in this cross-sectional study. A self-administered structured questionnaire with 25 questions was designed based on oral health knowledge, behavior and self-awareness towards periodontics. Students were briefed about the study and consent was obtained from them. All the students understood the purpose and nature of the survey and were told general instructions fill in the questionnaire without any influences. The students completed the questionnaires under supervision, and the questionnaires were collected immediately after completion. Study was approved by the Institutional Review Board.

2.1 Inclusion criteria

1. Dental students between age group of 17 and 22yrs
2. Only 1st year and 2nd year BDS students

2.2 Exclusion criteria

1. Post graduate students, Interns, dental professionals, Faculties
2. Students exposed to clinical practice
3. Age more than 22 years
4. Those who are unwilling to participate

2.3 Questionnaire design

The study questionnaire with close ended 25 questions was developed. The questionnaire included items regarding periodontics, oral hygiene practices, etiology, pathogenesis, clinical signs and symptoms, along with preventive measures of gingival and periodontal disease. Each question was given one correct answer and the others being the wrong one, and the participant responded to the statement by selecting one of three/four responses. The data was collected and analyzed using SPSS Statistics v. 21.0. Pearson's Chi-square test was used to compare the proportions, and Kruskal-Wallis test was adopted if necessary. A p-value less than 0.05 were considered to be statistically significant.

3. Results

A) Demographic data and validation

Out of 111 samples consisting of 53 undergraduate 1st year and 58 undergraduate 2nd year students it was observed 71 were (31 of 1st year, 40 of 2nd year) girls and 40 were (22 of 1st year, 18 of 2nd year) boys (Graph 1). On statistical evaluation it was observed all 111 samples were valid for the study with Cronbach's alpha reliability score being 0.0415 (Significant score). On further analysis of the given data the mean age of the study population was found to be 18.31 years of age with minimum being 17yrs and maximum being 22yrs of age showing S.D of 0.8942 with 0.1682 at 95% confidence interval. The overall chi-square statistic of the questionnaire is 219.45. The p-value is <0.0001.(Table 1) Correlation between the variables was calculated by using Kruskal-Wallis Test calculator showed p value of less than 0.5 followed by linear to linear association between the aggregate groups showed H-statistic of 8.8398 with p values <0.05. All these findings were significant at $p < .05$.

B) Knowledge about periodontics

On evaluating the knowledge about periodontics it was witnessed 95 out of 111 (86%) were aware of this dental wing practice among which only 61% had knowledge about the periodontal structures associated with disease and only 50% responded correctly regarding the role of periodontics in treating oral diseases. Only 54 out of 111 (48%) study participants answered when questioned about various treatment options other than cleaning followed in periodontics. It was also noticed awareness about laser therapy was only 48% followed by 40% for surgical procedures. 44 out of 111 (40%) were unaware of any surgical procedures carried out as a treatment option for periodontal diseases (Table 2)

C) Knowledge and awareness on oral hygiene practices

Although, tooth brush with dentifrices is the universally followed mechanical plaque removal method it was found that

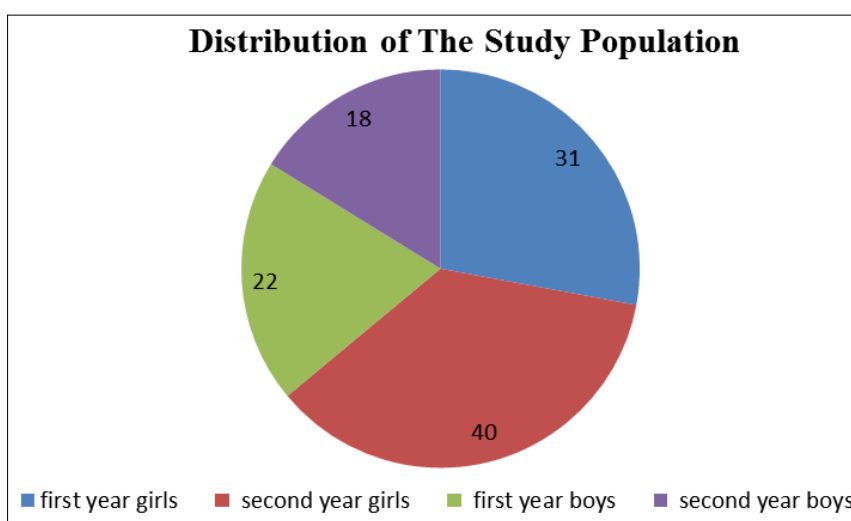
only 39% practice the recommended tooth brushing technique and 50% of students change their tooth brush as suggested where as 61 % and 50% follow improper tooth brushing technique and inappropriate frequency of changing toothbrushes respectively. On assessing the knowledge about cause, clinical signs and symptoms concerning with the oral, gingival and periodontal diseases it was observed only 66% of the study participants were aware of role of plaque and calculus in periodontal disease among which 26% were unaware of its mechanism related to their presence on tooth surface in causing diseases process. 85 out of 111 (77%) believe poor oral hygiene as a crucial factor in causing periodontal disease and consider bad breath as a significant sign of disease state. Majority of the students (73%) are knowledge about various clinical signs and symptoms like gingival bleeding, swollen gums, bad breath and associated systemic diseases whereas 26 out of 111 were oblivious of

confounding factors like hormonal changes, poor oral hygiene, smoking and systemic diseases responsible for periodontal or oral disease (Table 3).

D) Awareness on prevention and treatment modalities

97 out of 111 (88%) considers periodontal disease as a preventable by various approaches like maintaining good oral hygiene, frequent dental visits and termination of oral habits like smoking. Majority of students (63%) were aware of various methods and instrumentation of removing plaque, calculus, deposits, stains on the tooth surface among which 48% are not sure on their choice of preference according to the recommended protocols which reflects their non-clinical exposure. 44 out of 111 (40%) were unaware of any surgical procedures carried out as a treatment option for periodontal diseases and only 72% admits both scaling and root planing are necessary for treatment of periodontal diseases (Table 4).

3.1 Tables and Graph



Graph 1: Graph showing the distribution of the study population

Table 1: Table showing statistical analysis of the questionnaire:

Question	Pearson Chi-Square	Linear-By-Linear Association	Asymp/Exact significance	Significance
1.	4.221	2.096	0.239	No
2.	24.953	4.663	0.0051	Yes*
3.	12.202	0.08	0.00333	Yes*
4.	1.289	0.357	0.732	No
5.	14.771	0.01	0.001	Yes*
6.	5.151	0.876	0.562	No
7.	13.489	3.323	0.0068	Yes*
8.	6.901	0.083	0.677	No
9.	29.847	0.413	0.00026	Yes*
10.	17.956	15.595	0.001	Yes*
11.	1.219	0.196	0.658	No
12.	2.9878	1.523	0.217	No
13.	3.647	2.63	0.105	No
14.	2.5649	1.523	0.217	No
15.	3.489	3.323	0.068	No
16.	4.576	0.251	0.221	No
17.	2.29	0.996	0.095	No
18.	26.789	7.658	0.0022	Yes*
19.	3.745	0.425	0.54	No
20.	1.098	0.369	0.37	No
21.	36.478	11.498	0.0003	Yes*
22.	3.008	0.865	0.97	No
23.	24.453	8.564	0.0015	Yes*
24.	5.437	1.348	0.441	No
25.	3.399	0.965	0.983	No

Table 2: Responses on knowledge about periodontics

Question-Options	A	B	C	D
Q1	10	0	95	6
Q2	7	13	68	23
Q3	47	6	6	42
Q22	54	18	38	1
Q23	45	22	44	0
Q24	27	8	9	67

Table 3: Responses on attitude towards oral hygiene practices

Question-Options	A	B	C	D
Q4	15	31	52	13
Q5	26	36	43	6
Q6	66	37	2	6
Q10	39	28	7	37
Q7	25	8	49	29
Q9	35	20	38	18
Q11	42	17	31	21
Q12	10	85	8	8
Q21	16	61	4	30
Q13	21	6	4	80
Q14	57	17	37	0

Table 4: Responses on awareness about prevention and treatment modalities

Questions-Options	A	B	C	D
Q19	97	8	6	0
Q20	23	6	3	79
Q8	22	8	3	78
Q15	71	16	24	0
Q17	70	8	21	0
Q25	18	6	8	79
Q16	36	40	8	15
Q18	37	12	55	7

4. Discussion

Behavioral pattern towards oral health care practices depends on various factors like awareness, experience, environmental, social and psychological aspects. To the best of our knowledge, studies regarding the self-awareness and knowledge of oral/dental health or periodontal disease among non-clinical dental students are limited. However a positive association was noted in the previous studies between oral health education, dental attitude, oral hygiene practices, behavioral approach and dental education experiences during the academics.

Among various oral hygiene practices, tooth brush with dentifrices is the universally followed mechanical plaque removal method it was found that only 39% practice the recommended tooth brushing technique compared to studies by Neeraja *et al.* [9], Shiraz *et al.* [10], and Alzammam *et al.* (53.8%) [11] and Andhare *et al.* (63%) [7] showed better and higher results. Conversely only 23% follow horizontal stroke which is significantly less than the previous studies done by Zhu *et al.* (60%) [12], Rathod *et al.* (49%) [13] and Dayakar *et al.* (26%) [14]. In an average 50% of students change their tooth brush as per recommended guidelines similar to the study by Rathod *et al.* (59%) [13], Andhare, *et al.* (52%) [7] and Dayakar *et al.* (66.3%) [14].

In the present study 77% believe poor oral hygiene as a crucial factor in causing periodontal disease and also consider bad breath as a significant sign of disease state similar to the previous studies by Yao *et al.* (52.5%) [15], Andhare *et al.* (68%) [7], Ali *et al.* (81%) [16] and Dayakar *et al.* (86%) [14]. Correspondingly more than half dental student's (66%)

believes oral microorganisms' plays a significant role in periodontal and gingival disease similar to the study performed by Yao *et al.* (58.6%) [15]. Majority of the students (73%) are knowledge about various clinical signs and symptoms like gingival bleeding, swollen gums, bad breath and associated systemic diseases slightly less significant to study by Malla *et al.* [8], Ahamed *et al.* and Alzammam *et al.* (89%) [11].

Further analysis of the 111 respondents who had heard of periodontal disease revealed that only 50% had adequate knowledge of periodontal diseases, while 66% knew dental plaque to be the primary cause of periodontal disease which in contrast to study performed by Umezudike, *et al.* (29.8%, 14.9%) [17], Alzammam *et al.* (27.9%) [11] Which could be attributed to the fact that nonmedical professionals to the oral health care facility within the hospital have a great impact. 86% of students possessed good knowledge about periodontics in contrast to studies by Malla *et al.* (55%) [8] and Andhare *et al.* (56.4%) [7]. 72% admits both scaling and root planing are necessary for treatment of periodontal diseases of oral and periodontal health as similar to study by Malla *et al.* [8], Sharda *et al.* [18] and Ahamed *et al.* 39% [19] and Al-omari *et al.* [20] of the BDS non-clinical students follow good oral hygiene practices on a regular basis which is slightly higher to the study by Yo *et al.* (14%) [16], Malla *et al.* (22.5%) [8] Which signifies the lack of exposure and awareness to the clinical environment. Knowledge about advanced techniques like lasers should be introduced in the early academic carrier introductory classes itself. In the present study, the result showed that about 50% of students were unaware of these advancement techniques used in the field of periodontics.

5. Limitations

There is no other previous study of its kind for this specified study group from which a comparison can be drawn. Also, there is no study which compares the level of awareness about periodontics in relation with oral hygiene practices among the dental clinical and non-clinical exposed students with other dental professionals.

6. Conclusion

The present study clearly shows a lack of self-awareness, knowledge and attitude about various aspects of gingival and periodontal disease ranging from oral health care practices up to the higher level of prevention and treatment modalities among the budding dental students during their early academic life. Despite having good knowledge about periodontics (86%), only 72% admits both scaling and root planing are necessary for treatment of periodontal diseases of oral and periodontal health, and 44% were not even aware of the various treatment clinical procedures followed and only 39% of the BDS non-clinical students follow good oral hygiene practices on a regular basis. It is indeed believed dental students must be encouraged to be good role models in practicing as well as promoting oral health that largely impact their approach towards the patients once they enter into clinical practices. Hence steps have to be taken to incorporate positive knowledge by creating problem based education systems in the curriculum of non-clinical undergraduate BDS students.

Acknowledgement: None

Conflict of Interest: None Declared

Source of Funding: Self-Funded

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